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11 P.M. on April 30th. It is nearly stationary in the constellation *Sagittarius*, and begins to retrograde on April 8th.

*Neptune* is almost exactly opposite *Uranus*, rising when the latter is setting, and *vice versa*. It is in the constellation *Gemini*, and is above the horizon while *Uranus* is below.

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#### VARIABLE STAR NOTES.

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BY ROSE O'HALLORAN.

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After an absence of some years, the interesting maxima of *o Ceti*, or *Mira*, The Marvelous, have at length returned to the evening sky. As only new stars rival its range of variation, from ninth to second or third magnitude, its recent visibility has no doubt been widely observed. The minimum of October last was below the average, and it will be of interest to note if the coming maximum be greater or less than usual. Six observations, extending from October 3d to November 5th, showed that the companion-star of ninth magnitude was about two tenths brighter than *Mira*. On November 8th a hazy reddish aspect was noticeable in the variable, and, though the companion was more sharply defined, they seemed of equal brightness.

The magnitudes of adjacent stars given in a chart of the *Durchmusterung* were used for comparison during the subsequent rise to visibility.

1904.

- Nov. 27. Of 8.8 magnitude.
- Dec. 2. Of 8.5 magnitude.
- Dec. 16. Of 8th magnitude.
- Dec. 24. Of 7.7 magnitude.

1905.

- Jan. 1. About  $7\frac{1}{2}$  magnitude. It is reddish and visible in an opera-glass.
- Jan. 3. 7.3 magnitude. Dimmer than 71 *Ceti*.
- Jan. 10. Greatly increased in brightness. Brighter than 71 *Ceti*, and nearly as bright as 70 *Ceti*. Probably of 6th magnitude.
- Jan. 17. Brighter than 67 or 69 *Ceti*, classed as 5.5. Less than S *Ceti*.

Vicinity of *Y Cassiopeiae*.*Y Cassiopeiae*.

In contrast to  $\alpha$  *Ceti* is *Y Cassiopeiae*, known but a few years, and ranging from less than 9th magnitude to 13th in a period not yet very accurately ascertained. A recent maximum observed as follows does not accord with prediction:—

1904.

- Sept. 2. Of about 11th magnitude. Brighter than *k*, classed as 11.3.
- Sept. 6. Some steps brighter but less than *h* of 10.4 magnitude.
- Sept. 12 to 18. Not noticeably increased.
- Oct. 3. Brighter than *h*, less than *g*.
- Oct. 11. Equals *g*. Brighter than *h*.
- Oct. 16. Brighter than *g*. Equals *e*.
- Oct. 19. Unchanged.
- Oct. 28. Brighter than *e*, less than *c* or *d*.
- Oct. 30. About midway between *c* and *d*.
- Nov. 2. Equals *c*. Night very clear.
- Nov. 5, 7, 8. The same.
- Nov. 12. Some steps brighter than *c*.
- Nov. 15. Slightly decreased, but still brighter than *c*.
- Nov. 27. Less than *c*. Equals *e*.
- Dec. 3. Less than *e*. Equals *f*. Brighter than *g*.

In the accompanying map the variable is inclosed in a circle.

SAN FRANCISCO, January 19, 1905.